PATENT SPECIFICATION

DRAWINGS ATTACHED

1,066,691

1,066,691

Date of filing Complete Specification: March 30, 1966.

Application Date: Feb. 3, 1965. No. 4789/65.

Complete Specification Published: April 26, 1967.

Index at acceptance: —B7 H(A2C5, A2C10, A2D)

Int. Cl.:—B 60 k, l, B 62 d

COMPLETE SPECIFICATION

Motorised Trucks

We, CAMBRIAN ENGINEERING INDUSTRIES LIMITED, a British Company, of Burry Port, Carmarthenshire, South Wales, and CHARLES FREDERICK NELSON POWELL, a British Subject, of the Company's address, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to motorised trucks, in particular of the kind having a platform mounted on a pair of trailing wheels and driven by a unit mounted directly above a steerable driving wheel.

According to the present invention, a motorised truck of the knd just described has a chassis including a low-level supporting structure for carrying a load platform, a pair of undriven wheels carried by the chassis through axles positioned horizontally within the chassis at a level higher than that of the supporting structure, and a steerable driving wheel operably connected to a driving unit. Such an arrangement permits very low mounting of the platform, height of 1—3 inches being possible, and also allows the use of relatively large diameter undriven wheels. The low-mounting of the platform provides easy access for a rider, facilitates the loading and unloading of heavy goods and improves the stability of the truck. The better stability provides greater safety for a rider of the truck especially when changing direction.

Preferably a side of the chassis of the truck is formed by a vertical framework having the driving unit mounted at one side and the load platform supporting structure extending from the other side thereof.

The driving unit can be an electric motor or an internal combustion engine, in both cases forward and reverse motion being provided as well as variable speed facilities. Where the driving unit is an electric motor, the batteries providing electric power for the motor are mounted on the one side of the vertical framework with, preferably, the electric motor located directly beneath the batteries. With this arrangement the weight of the batteries and motor is directly over the driving wheel thus considerably increasing the grip of the wheel on the floor surface.

The truck includes an upstanding steering column attached to the chassis in a manner permitting rotation of the column, the driving wheel depending from one end of the column. The driving wheel can be steered by a tiller type control member attached to the other and distal end of the steering column. Preferably the control member is pivoted to the steering column to be movable through at least 180° in a vertical plane thus permitting control by an operator standing or sitting on the truck or by a pedestrian preceding or following the truck. If both rider and pedestrian control are provided, the steering column is normally mounted to permit about 180° rotation in the horizontal plane thereof, although 360° horizontal rotation can be arranged.

By way of example, an embodiment of the invention will now be described in greater detail with reference to the drawing accompanying the Provisional Specification, which is a perspective view of a motorised truck.

The truck has a chassis frame, generally indicated by the reference numeral 1, comprising two generally triangular frames 2 having vertical members 3 at the forward end of the truck and horizontal base members 4 extending rearwardly of the members 3. The vertical members 3 are braced by cross members, two of which 3A are illustrated, and between the lowermost cross member 3A and a cross member extending between the horizontal members at the rear of the truck, there

[Price

extend several, conveniently three, spaced floor support members. At the rear end of the frames 2, each carries an undriven wheel 5 and supported by the floor support members is a load carrying platform 6, disposed below the axles of the wheels 5 so that it is close to ground level.

Cantilevered from the front of the vertical chassis members 3 is a shelf 7 and secured between the shelf and the vertical chassis members are a pair of dependent anti-tip skids 8, one either side of the chassis. A vertical steering column 9 extends through the shelf 7 and is secured to the shelf to permit rotation of the column. Fixed to, and dependent from, the lower end of the steering column 9 is a bracket assembly 10 on which is mounted a driving wheel 11 and an electric motor 12, drivably coupled to the wheel 11, the bracket 10 supporting a shield partly covering the motor. The upper end of the steering column 9 carries a control box 9*a* to which a steering tiller control member 13 is pivoted in such a manner that it is movable in a vertical plane through an arc of about 180°.

It can be arranged for the chassis to be constructed independently of the forward section comprising the shelf, steering assembly, motor drive unit, etc., in which case the different sections can be packed together compactly for shipment and assembled at will. This arrangement has the further advantage that the forward part of the truck can be fitted with load platforms of different sizes as required.

The motor 12 is powered by batteries 14, supported on the shelf 7, and covered by a housing 15. The control box 9*a* at the upper end of the column 9 has mounted thereon a switch 9*b* for controlling current supply from the batteries to the motor for both directions of movement, i.e. forward or reverse. Mounted upon the tiller 13 is a housing 13*a* containing a speed control which is operated by means of a handle 13*b* spring urged to an "off" position. The handle 13*b* is pulled towards the grip 13*c* on the tiller 13 to increase the speed of the truck.

Since the switch 9*b* is mounted upon the control box 9*a* carried by the column 9, the "forward" and "reverse" positions of the switch are the same regardless of the position of the tiller in the vertical plane. Similarly the operation of the handle 13*b* is the same, i.e. always towards or away from the grip 13*c*.

Alternatively the "forward-off-reverse" control could be mounted directly on the tiller 13 with, for example, two operating rods of which one is visible in one position in the vertical plane of the tiller and the other in the other position of the vertical plane. Thus one control knob might be positioned on the upper surface of the housing 13*a* and the other knob on the lower surface. Each knob has its own indicator plate giving the control positions of the knob.

The electric motor 12 is a heavy duty traction motor of the series wound high torque type, and is coupled to the driving wheel 11 by roller chains. The driving unit incorporates an electromagnetic disc brake fitted to the driving shaft of the motor 12.

The motor truck can be operated by a pedestrian operator preceding the truck, in which case the tiller 13 will be positioned as shown in the drawing, or, when unloaded or partly loaded, by an operator riding on the truck, the tiller 13 then being pivoted to swing in a vertical plane through, say 210°, from the position illustrated.

The brake and speed controls on the tiller 13 which are in the form of a single "deadman" type of control, are designed to be equally effective and similarly operable in both of the above positions of the tiller.

The chassis frame can be of welded steel construction, and can be lined, if required, for example by a three-sided wire mesh grid.

The platform 6, which is detachable and may be omitted if required, can be made from any suitable material, e.g. wood or metal, and, by virtue of the mounting of the platform with respect to the undriven wheels, a very low ground clearance can be obtained, in a typical case about 3 inches, but even lower clearances, down to say 1 inch, can be provided if so required. In the latter case, a good floor surface is required.

A detachable towing bracket may be attached to the rear of the truck in which case the truck may be used for towing trailers, semi-live stillages and the like.

Instead of the electric motor 12 referred to above, an internal combustion engine could be used with drive transmitted through a gearbox providing a required number of forward gears and a reverse gear.

WHAT WE CLAIM IS:—

1. A motorised truck having a chassis including a low-level supporting structure for carrying a load platform, a pair of undriven wheels carried by the chassis through axles positioned horizontally within the chassis at a level higher than that of the supporting structure, and a steerable driving wheel dependent from the chassis and operably connected to a driving unit.

2. A motorised truck as claimed in claim 1 in which a side of the chassis is formed by a vertical framework at one side of which is mounted the driving unit and from the other side of which extends the load platform supporting structure.

3. A motorised truck as claimed in claim 2 in which the driving unit is a battery powered electric motor.

4. A motorised truck as claimed in claim 3 in which the battery is mounted on the

one side of the vertical framework and the electric motor is located directly beneath the battery.

5. A motorised truck as claimed in claim 1 or claim 2 in which the driving unit includes an internal combustion engine.

6. A motorised truck as claimed in any one of claims 1—5 in which the driving wheel depends from one end of a steering column attached to the chassis in a manner permitting rotation of the column.

7. A motorised truck as claimed in claim 6 in which a control member is attached to the other end of the steering column.

8. A motorised truck as claimed in claim 7 in which the control member is of the tiller type pivoted on the steering column to be movable in a vertical plane.

9. A motorised truck substantially as described with reference to and as illustrated by the drawing accompanying the Provisional Specification.

ABEL & IMRAY,
Chartered Patent Agents,
Quality House,
Quality Court,
Chancery Lane,
London, W.C.2.

Leamington Spa: Printed for Her Majesty's Stationery Office by the Courier Press.—1967.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

1066691 PROVISIONAL SPECIFICATION
1 SHEET *This drawing is a reproduction of the Original on a reduced scale*